Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1.-43. (Cancelled)

44. (Currently Amended) A method for creating a query search condition through a user interface and for modelling a query, the method comprising:

displaying column names that are selectable for use in a predicate of the query search condition in a first display area of the user interface;

displaying column operators that are selectable for use in the predicate of the query search condition in a second display area of the user interface;

receiving selection of one of the column names displayed in the first display area of the user interface;

receiving selection of one of the column operators displayed in the second display area of the user interface;

automatically generating a list of all column values that are selectable for use in the predicate of the query search condition based on the selected column name and the selected column operator;

displaying the list of all column values that are selectable for use in the predicate of the query search condition in a third display area of the user interface;

the first display area, the second display area, and the third display area being displayable together in the user interface;

~~receiving selection of at least two displayed predicates in the query search condition; and~~

~~grouping the selected predicates based on a user selection of a displayed grouping control, the grouping controlling the order in which the selected predicates are evaluated with respect to at least one unselected predicate of the query search condition~~

using a computer to form a complete query statement based on the query search condition and selections in the user interface; and

using the computer to process the complete query statement into a form defined by a query model, the form including a plurality of query elements corresponding to the complete query statement, wherein the processing into the form includes creating and storing the form including a tree structure for each of the query elements of the query statement, the form indicating relationships between all the query elements of the query statement.

45. (Previously Presented) The method of claim 44, further comprising:

receiving selection of one or more of the column values displayed in the third display area of the user interface.

46. (Cancelled).

47. (Cancelled)

48. (Previously Presented) The method of claim 45, further comprising:

forming the predicate of the query search condition based on the selected column name, the selected column operator, and the one or more selected column values;

adding the predicate to the query search condition; and

displaying the query search condition and the predicate in a fourth display area of the user interface as one of a plurality of displayed predicates of the query search condition, the selection of at least two predicates being from the displayed query search condition,

the first display area, the second display area, the third display area, and the fourth display area being displayable together in the user interface.

49. (Currently Amended) The method of claim 48, further comprising:

updating [[a]] the query model with the predicate of the query search condition; and

displaying SQL code of the query model in a fifth display area of the user interface,

the first display area, the second display area, the third display area, the fourth display area, and the fifth display area being displayable together in the user interface.

50. (Currently Amended) The method of claim 44, wherein displaying column names that are selectable for use in the predicate of the query search condition comprises:

displaying the column names that are selectable for use in the predicate of the query search condition in a first pull-down menu; and

displaying the column operators that are selectable for use in the predicate of the query search condition in a second pull-down menu.

51. (Cancelled).

52. (Previously Presented) The method of claim 44, wherein displaying the list of all column values that are selectable for use in the predicate of the query search condition comprises:

displaying the list of all column values that are selectable for use in the predicate of the query search condition in a third pull-down menu.

53. (Previously Presented) The method of claim 44, wherein displaying the list of all column values that are selectable for use in the predicate of the query search condition comprises:

displaying the list of all column values that are selectable for use in the predicate of the query search condition in a plurality of pull-down menus.

54. (Previously Presented) The method of claim 44, further comprising displaying the query search condition in a fourth display area of the user interface, the query search condition including a plurality of displayed predicates, at least one of the predicates based on the selections of the column names and the column operators, the selection of at least two predicates being from the displayed query search condition,

the first display area, the second display area, the third display area, and the fourth display area being displayable together in the user interface.

55. (Previously Presented) The method of claim 48 wherein adding the predicate to the query search condition is in response to a selection from the user to add the predicate.

56. (Currently amended) The method of claim 44, wherein the processing into the form further includes ~~comprising~~:

~~forming a query statement based on, at least in part, the query search condition and selections in the user interface; and~~

~~processing the query statement into a form defined by a query model, the processing including:~~

using a plurality of content viewers to interface to an application that uses the user interface and to process the query statement into the form defined by the query model by obtaining the query search condition and selections input in the user interface ~~query information independent of a specific structure~~, including:

using a particular one of a plurality of API-specific content viewers to interface with a particular graphical user interface (GUI) API used by the application, each API-specific content viewer usable with an associated one of a plurality of different available ~~graphical user interface (GUI)~~ GUI APIs and wherein each of the API-specific content viewers processes item provider objects provided by the model content provider for structures specific to the associated GUI API; and

using a non-specific content viewer ~~in communication~~ to interface with the API-specific content viewers ~~to provide the query information~~; and

using a model content provider to receive, from the non-specific content viewer, the query search conditions and selections independent of a specific structure ~~information~~ and to translate the query search conditions and selections ~~information~~ into the form

defined by the query model~~, the form including item provider objects that are instances of query model elements of the query model and that include query model relationships of the query model~~.

57. (Currently Amended) The method of claim 56, wherein each of the API-specific content viewers processes item provider objects describing the query statement and provided by the model content provider for structures specific to the associated GUI API.

58. (Currently amended) The method of claim [[56]] 44 wherein creating and storing the tree structure for each query element ~~processing the query statement into the form in accordance with the query model~~ includes:

selecting [[a]] one of the query elements ~~element~~ of the query statement ~~for modeling from a plurality of query elements in the query statement~~;

identifying at least one type associated with the selected query element;

defining a parent node representing the selected query element;

defining a child node for the parent node for each of the identified at least one types; and

examining each of the child nodes to determine one or more subtypes of the child nodes;

defining a subtype child node of each child node for each of the determined subtypes; and

using the defined parent node, child node, and subtype child nodes to create [[a]] the tree structure representative of the selected query element.

59. (Currently amended) The method of claim [[56]] 44 wherein using the model content provider to receive the query information and translate the query information into the form defined by the query model further comprises:

adding at least one proxy query element ~~item provider object~~ to the form to replace at least one reference to at least one other form defined by the query model, and

reestablishing the at least one reference to the form defined by the query model after code is generated from the form to avoid code being generated in the other form.

60. (Previously Presented) The method of claim 56 wherein the translating of the query information into the form defined by the query model includes:

creating the item provider objects dynamically as the query statement is formed.

61. (Previously Presented) The method of claim 44 wherein the at least two selected predicates and the query search condition are displayed as text in a displayed window, and wherein the grouping control is enabled for user selection only in response to the user selecting the at least two predicates as a number of text rows of the displayed query search condition that have a same spatial indentation level at first and last rows of the selected text rows, the spatial indentation level being relative to an edge of the displayed window displaying the query search condition.

62. (New) The method of claim 44 wherein the complete query statement includes at least one of a FROM clause and a GROUP BY clause.

63. (New) The method of claim 44 wherein the tree structure includes atomic query elements and combined query elements, the atomic query elements being one or more of the query elements that are noniterative and unnested and do not have any sub-elements, and the combined query elements being one or more of the query elements that each include a plurality of sub-elements related by a combined element operator, the tree structure including the sub-elements.

64. (New) The method of claim 63 further comprising using the computer to call to one of the combined query elements, the calling causing a return of the called combined query element and all of the sub-elements of the called combined query element.

65. (New) A computer readable medium encoded with a computer program for creating a query search condition through a user interface and for modelling a query, the computer program comprising computer-executable instructions for:

displaying column names that are selectable for use in a predicate of the query search condition in a first display area of the user interface;

displaying column operators that are selectable for use in the predicate of the query search condition in a second display area of the user interface;

receiving selection of one of the column names displayed in the first display area of the user interface;

receiving selection of one of the column operators displayed in the second display area of the user interface;

automatically generating a list of all column values that are selectable for use in the predicate of the query search condition based on the selected column name and the selected column operator;

displaying the list of all column values that are selectable for use in the predicate of the query search condition in a third display area of the user interface;

the first display area, the second display area, and the third display area being displayable together in the user interface;

using a computer to form a complete query statement based on the query search condition and selections in the user interface; and

using the computer to process the complete query statement into a form defined by a query model, the form including a plurality of query elements corresponding to the complete query statement, wherein the processing into the form includes creating and storing the form including a tree structure for each of the query elements of the query statement, the form indicating relationships between all the query elements of the query statement.

66. (New) The computer readable medium of claim 65 wherein the tree structure includes atomic query elements and combined query elements, the atomic query elements being one or more of the query elements that are noniterative and unnested and do not have any sub-elements, and the combined query elements being one or more of the query elements that each include a plurality of sub-elements related by a combined element operator, the tree structure including the sub-elements.